

Page 3 of 16  
Application No. 09/976,776  
Amendment A

**Amendments To The Claims**

Claim 1 (currently amended) A fluid treatment system comprising:  
a sealed fluid flow path including a treatment chamber portion and containing a fluid to be passed therethrough and treated with light, the treatment zone transmissive to at least 1% of the light having at least one wavelength within a range of 170 to 2600 nm, the sealed fluid flow path removable from a light treatment system and wherein the sealed fluid flow path includes:

an input conduit for supplying first fluid the fluid to be treated;  
the treatment chamber portion sealingly coupled to the input conduit; and  
an output conduit sealingly coupled to the treatment chamber portion,  
wherein the fluid is to be flowed from the input conduit through the treatment chamber portion and out the output conduit, wherein the fluid is to be treated with the light as it flows through the treatment chamber portion; and

the system further comprising:  
a first process monitor coupled to the input conduit; and  
a second process monitor coupled to the output conduit.

Claim 2 (cancelled)

Claim 3 (currently amended): The system of Claim 1 [[2]] further comprising a first container portion coupled the input conduit containing the fluid to be treated.

Claim 4 (original): The system of Claim 3 further comprising a second container portion coupled to the output conduit for receiving the fluid once treated.

Claim 5 (original): The system of Claim 4 further comprising a third fluid container portion coupled to the output conduit, wherein a portion of the fluid flowed

**BEST AVAILABLE COPY**

Page 4 of 16  
Application No. 09/976,776  
Amendment A

through the treatment chamber portion is to be collected in the second fluid container portion and another portion of the fluid flowed through the treatment chamber portion is to be collected in the third fluid container portion.

Claim 6 (original): The system of Claim 4 further comprising an actuator assembly coupled to the first fluid container portion for causing the fluid to be flowed through the sealed flexible fluid flow path at a specified flow rate.

Claim 7 (currently amended): The system of Claim 1 ~~[[2]]~~ wherein the treatment chamber portion is positioned to receive the light from a light source.

Claim 8 (cancelled)

Claim 9 (currently amended): The system of Claim 1 ~~[[8]]~~ wherein one or more of the first process monitor and the second process monitor are selected from a group consisting of: a pressure sensor and a temperature sensor.

Claim 10 (original): The system of Claim 1 wherein the sealed fluid flow path comprises a flexible sealed fluid flow path.

Claim 11 (original): The system of Claim 1 wherein a treatment chamber portion of the sealed fluid flow path is flexible.

Claim 12 (currently amended): A fluid treatment system comprising:  
a sealed fluid flow path including a treatment chamber portion and containing a fluid to be passed therethrough and treated with light, the treatment zone transmissive to at least 1% of the light having at least one wavelength within a range of 170 to 2600

Page 5 of 16  
Application No. 09/976,776  
Amendment A

nm and wherein the sealed fluid flow path includes:

an input conduit for supplying the fluid to be treated;

the treatment chamber portion sealingly coupled to the input conduit; and

an output conduit sealingly coupled to the treatment chamber portion,

wherein the fluid is to be flowed from the input conduit through the treatment chamber portion and out the output conduit, wherein the fluid is to be treated with the light as it flows through the treatment chamber portion; and

the system further comprising:

a first process monitor coupled to the input conduit; and

a second process monitor coupled to the output conduit.

Claim 13 (currently amended): A fluid treatment system comprising:

a sealed fluid flow path comprising:

a first fluid container portion for containing a fluid to be treated with light;

a treatment chamber portion having an input and an output, the input of the treatment chamber portion sealingly coupled to an output input of the first fluid container portion, wherein the treatment chamber portion transmits at least 1 % of the light having at least one wavelength within a range of 170 to 2600 nm; and

a second fluid container portion sealingly coupled to the ~~the~~ output of the treatment chamber portion, wherein the fluid is to be flowed from the first fluid container portion through the treatment chamber portion to the second fluid container portion, wherein the fluid is to be treated with the light as it flows through the treatment chamber portion;

a first process monitor coupled to the input of the treatment chamber portion;

and

a second process monitor coupled to the output of the treatment chamber portion.

Page 6 of 16  
Application No. 09/976,776  
Amendment A

Claim 14 (original): The system of Claim 13 wherein the treatment chamber portion is made of a flexible material.

Claim 15 (original): The system of Claim 13 wherein the sealed fluid flow path is removable from a light treatment system.

Claim 16 (currently amended): A method of treating a fluid product with light comprising:

flowing the fluid product from a first fluid container ~~one~~ portion of a sealed fluid flow path ~~containing the fluid product through a treatment chamber to another~~ portion of the sealed fluid flow path to a second fluid container ~~portion of the sealed fluid flow path, the first fluid container portion sealingly coupled to an input of the treatment chamber portion and the second fluid container portion sealingly coupled to an output of the treatment chamber portion; and~~

monitoring a first parameter at the input of the treatment chamber portion;

illuminating the fluid product with light having at least one wavelength within a range of 170 to 2600 nm as the fluid product is flowed through the treatment chamber ~~portion sealed flexible fluid flow path~~ in order to deactivate pathogens within the fluid product; and

monitoring the first parameter at the output of the treatment chamber portion.

Claims 17-18 (cancelled)

Claim 19 (currently amended): The method of Claim 16 ~~[[18]]~~ further comprising sealing the fluid product within the first fluid container portion.

Page 7 of 16  
Application No. 09/976,776  
Amendment A

Claim 20 (original): The method of Claim 18 further comprising removing, after the illuminating step, the first fluid container portion, the second fluid container portion and the treatment chamber portion from a fluid treatment system.

Claim 21 (original): The method of Claim 20 further comprising replacing the first fluid container portion, the second fluid container portion and the treatment chamber portion having been removed from the fluid treatment system, with another first fluid container portion containing another fluid to be treated, another second fluid container portion, and another treatment chamber portion in the fluid treatment system.

Claim 22 (original): The method of Claim 18 further comprising removing, after the illuminating step, the first fluid container portion, the second fluid container portion and the treatment chamber portion from a fluid treatment system sealingly coupled together.

Claim 23 (original): The method of Claim 18 further comprising unsealing the second fluid container portion from the sealed fluid flow path.

Claim 24 (original): The method of Claim 23 further comprising removing the second fluid container portion from a fluid treatment system containing the sealed fluid flow path.

Claim 25 (original): The method of Claim 18 wherein the illuminating step comprises illuminating the fluid product with pulses of light.

Claim 26 (original): The method of Claim 25 wherein the illuminating step

Page 8 of 16  
Application No. 09/976,776  
Amendment A

comprises illuminating the fluid product with the pulses of light having wavelengths within a spectral range of at least between 240 nm and 280 nm and having a pulse duration of less than 100 ms.

Claim 27 (original): The method of Claim 25 wherein the illuminating step comprises illuminating the fluid product with the pulses of light having a fluence greater than 0.001 J/cm<sup>2</sup>.

Claim 28 (original): The method of Claim 25 wherein the illuminating step comprises illuminating the fluid product with the pulses of light, wherein at least 0.5% of the fluence of the pulses of light is concentrated at wavelengths within a range of 200 nm to 320 nm.

Claim 29 (currently amended): A method of treating a fluid product with light comprising:

flowing the fluid product from a first fluid container portion of a sealed fluid flow path through a treatment chamber portion of the sealed fluid flow path to a second fluid container portion of the sealed fluid flow path, the first fluid container portion sealingly coupled to an input of the treatment chamber portion and the second fluid container portion sealingly coupled to an output of the treatment chamber portion; and  
monitoring a first parameter at the input of the treatment chamber portion;  
illuminating the fluid product with light as it is flowed through the treatment chamber portion in order to deactivate pathogens within the fluid product; and  
monitoring the first parameter at the output of the treatment chamber portion.

Claim 30 (original): The method of Claim 29 wherein the treatment chamber portion comprises a flexible treatment chamber portion.

Page 9 of 16  
Application No. 09/976,776  
Amendment A

Claim 31 (original): The method of Claim 29 wherein the illuminating step comprises illuminating the fluid product with pulses of light.

Claim 32 (new): The system of claim 1 further comprising:  
a process controller coupled to the first process monitor and the second process monitor and adapted to adjust a light treatment parameter in response to measurements from the first process monitor and the second process monitor.

Claim 33 (new): The system of Claim 12 wherein one or more of the first process monitor and the second process monitor are selected from a group consisting of: a pressure sensor and a temperature sensor.

Claim 34 (new): The system of claim 12 further comprising:  
a process controller coupled to the first process monitor and the second process monitor and adapted to adjust a light treatment parameter in response to measurements from the first process monitor and the second process monitor.

Claim 35 (new): The system of Claim 13 wherein one or more of the first process monitor and the second process monitor are selected from a group consisting of: a pressure sensor and a temperature sensor.

Claim 36 (new): The system of claim 13 further comprising:  
a process controller coupled to the first process monitor and the second process monitor and adapted to adjust a light treatment parameter in response to measurements from the first process monitor and the second process monitor.

Page 10 of 16  
Application No. 09/976,776  
Amendment A

Claim 37 (new): The method of claim 16 wherein the monitoring steps comprise:  
monitoring a pressure of the fluid flow at the input of the treatment chamber  
portion; and  
monitoring the pressure of the fluid flow at the output of the treatment chamber  
portion.

Claim 38 (new): The method of claim 16 wherein the monitoring steps comprise:  
monitoring a temperature of the fluid flow at the input of the treatment chamber  
portion; and  
monitoring the temperature of the fluid flow at the output of the treatment  
chamber portion.

Claim 39 (new): The method of claim 16 further comprising:  
adjusting a light treatment parameter in response to measurements obtained  
during the monitoring steps.

Claim 40 (new): The method of claim 29 wherein the monitoring steps comprise:  
monitoring a pressure of the fluid flow at the input of the treatment chamber  
portion; and  
monitoring the pressure of the fluid flow at the output of the treatment chamber  
portion.

Claim 41 (new): The method of claim 29 wherein the monitoring steps comprise:  
monitoring a temperature of the fluid flow at the input of the treatment chamber  
portion; and  
monitoring the temperature of the fluid flow at the output of the treatment  
chamber portion.



Page 11 of 16  
Application No. 09/976,776  
Amendment A

Claim 42 (new): The method of claim 29 further comprising:  
adjusting a light treatment parameter in response to measurements obtained  
during the monitoring steps.

**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**